

Amendment and Response

Applicant: Lizhang Yang

Serial No.: 10/687,325

Filed: October 16, 2003

Docket No.: 59093US002

Title: OPTICAL INTERCONNECT DEVICE

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REMARKS

The following remarks are made in response to the Non-Final Office Action mailed June 29, 2006, in which claims 1-4, 6-8 and 10-15 are rejected and claim 9 is objected to. With this Response, claim 1 has been amended and new claim 16 has been added. Claims 1-4 and 6-16 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102

Claims 1-4 and 11-15 stand rejected under 35 U.S.C. 102(a) as being anticipated by Suematsu et al. (6,623,175).

The Office Action alleges that Suematsu et al. shows, in Figure 2, an optical interconnect device comprising: a plurality of fiber optic cables (10) having two ends and comprising a plurality of optical fibers (12) each surrounded by a protective jacket (11), wherein a diameter of each fiber optic cable is larger than the diameter of the each optical fiber and wherein the protective jacket of at least a first end of the each fiber optic cable has been removed thereby exposing the optical fibers; a ribbonized assembly (2) encasing a portion of the first ends of the fiber optic cables and the first ends of the optical fibers, wherein the fiber optic cables lie in a first plane and occupy an input zone, the fibers lie in a second plane substantially parallel to the first plane and occupy an output zone, the cables and fibers both occupy a transition zone in which the fibers are non-parallel, and the optical fibers in the output zone lie parallel to one another and have a first pitch; and a ferrule (3) attached to the ribbonized assembly, the ferrule having a plurality of internal grooves (9) having a second pitch, wherein the first pitch of the optical fibers is substantially equal to the second pitch of the ferrule.

The Examiner's rejection is respectfully traversed. Under 35 U.S.C. §102, the cited reference must show each and every feature of the claimed invention. Extension of or speculation as to the cited teaching is permitted only when *necessarily present* in the disclosed apparatus or method. In other words, if a particular feature is not specifically disclosed it can only be relied upon under 35 U.S.C. §102 if and only if such feature is necessarily present in the disclosed apparatus or method. Applicants respectfully submit that Suematsu et al. fails to disclose all of the elements of the present invention.

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As amended, claim 1 sets forth an optical interconnect device. The device comprises **(emphasis added):**

“(a) a plurality of fiber optic cables, each cable having two ends and comprising at least one optical fiber surrounded by a protective jacket where the diameter of each fiber optic cable is larger than the diameter of its optical fiber and where the protective jacket of at least a first end of the fiber optic cable have been removed thereby exposing first ends of the optical fibers;

(b) a ribbonized assembly defining an input zone, a transition zone and an output zone encasing a portion of the first ends of the fiber optic cables and the optical fibers, where the fiber optic cables lie in a first plane and occupy the input zone, the fibers lie in a second plane substantially parallel to the first plane and occupy the output zone, the cables and fibers both occupy the transition zone in which the fibers are non-parallel, and the optical fibers in the output zone lie parallel to one another and have a first pitch; and

(c) a ferrule terminating the ribbonized assembly, the ferrule having a plurality of internal grooves having a second pitch;
wherein the first pitch of the optical fibers is substantially equal to the second pitch of the ferrule.”

Applicant respectfully submits that Suematsu et al. fails to disclose both the “ribbonized assembly defining an input zone, a transition zone and an output zone encasing a portion of the first ends of the fiber optic cables and the optical fibers” and the “ferrule terminating the ribbonized assembly” as set forth in amended independent claim 1.

Suematsu et al. discloses an optical connector ferrule. Referring to col. 3, lines 20-53 and FIGS. 1A-2, the optical connector ferrule is formed by fitting a cylindrical metal sleeve (2) onto a cylindrical molded plastic member (1). At the longitudinal ends of the member (1), there are formed flanges (3) protruding outwardly in the radial direction. The metal sleeve (2) is fitted onto molded plastic member (1) between flanges (3). At the center of molded plastic member (1), there is a fiber insertion hole (4) extending from one end surface 5 to ferrule end face 6. Fiber insertion hole (4) is composed of an introductory hole (7), an intermediate hole (8), and minute holes (9). The introductory hole (7) has a sectional area which allows insertion of the coated portions (11) of optical fibers (10). The intermediate hole (8) has a sectional area which does not allow insertion of the coated portions (11) of the optical fibers (10), but which allows insertion of bare fibers (12) exposed in front of the coated portions (11). Each of the minute holes (9) has a sectional area which allows individual insertion of each of the forward end portions of the bare fibers (12) inserted into the intermediate hole (8).

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Referring to Fig. 2 of Suematsu et al., the Office Action characterizes cylindrical metal sleeve (2) as the "ribbonized assembly" set forth in claim 1, and further characterizes as a "ferrule" that portion of the device of Suematsu et al. having minute holes (9). Although the Office Actions specifically identifies flanges (3) as the "ferrule," the further identification of holes (9) as being part of the "ferrule" suggests that molded plastic member (1) is characterized as a ferrule, as it is member (1) that defines both flanges (3) and holes (9). Clearly, a single element of Suematsu et al. (i.e., molded plastic member (1)) cannot properly be characterized as both the "ribbonized assembly defining an input zone, a transition zone and an output zone encasing a portion of the first ends of the fiber optic cables and the optical fibers" and the "ferrule terminating the ribbonized assembly."

In Suematsu et al., the cables and fibers are positioned and aligned by insertion hole (4), and particularly by introductory hole (7), intermediate hole (8), and minute holes (9). However, insertion hole (4) is defined by molded plastic member (1). As discussed above, member (1) has been characterized in the Office Action as the claimed "ferrule," and therefore cannot also be considered as the claimed "ribbonized assembly" in the present application. Without the insertion hole (i.e., introductory hole (7), intermediate hole (8), and minute holes (9)) of member (1), the metal sleeve (2) of Suematsu et al. cannot be said to define an input zone, a transition zone and an output zone, as set forth in amended claim 1. However, if the components of insertion hole (4) are characterized as part of the claimed "ribbonized assembly", then introductory hole (7), intermediate hole (8), and minute holes (9) cannot also properly be considered as part of the claimed "ferrule" in the present application. That is, for Suematsu et al. to anticipate all of the elements of claim 1, member (1) and the introductory hole (7), intermediate hole (8), and minute holes (9) defined thereby must be characterized as part of the claimed ribbonized assembly, and also as part of the claimed ferrule. Clearly, member (1) cannot be properly characterized as both claimed elements. Accordingly, Suematsu et al. fails to disclose both the claimed "ribbonized assembly" and "ferrule attached to the ribbonized assembly." For at least this reason, Applicants submit that Suematsu et al. cannot support a rejection of the claimed invention under 35 U.S.C. 102(a), and respectfully request that the rejection be withdrawn.

Claims 2-4 and 7-15 each depend, either directly or indirectly, from amended independent claim 1, which allowable for at least the reasons set forth above. Accordingly,

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claims 2-4 and 7-15 are also allowable at least by reason of their dependency from an allowable claim.

Claim Rejections under 35 U.S.C. § 103

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Suematsu et al. (6,623,175).

The Office Action alleges that Suematsu et al. discloses the invention of claim 6, except for the ribbonized assembly comprising an ultraviolet light curable resin. The Office Action alleges it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Suematsu et al. to have the ribbonized assembly comprising an ultraviolet light curable resin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice.

As described above, Suematsu et al. fails to disclose the invention of amended independent claim 1, from which claim 6 depends. Accordingly, claim 6 is allowable at least by reason of its dependency from an allowable claim, and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 7, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suematsu et al. (6,623,175) in view of Maenishi et al. (5,905,829).

The Office Action alleges Suematsu et al. discloses the claimed invention as described above, except for non-active fibers disposed adjacent the optical fibers. The Office Action cites Maenishi et al. as overcoming the acknowledged deficiency of Suematsu, with particular reference made to Figure 1 (dummy fiber 2Z).

As described above, Suematsu et al. fails to disclose the invention of amended independent claim 1, from which claims 7, 8 and 10 depend. Maenishi et al. fails to remedy the deficiencies of Suematsu et al. as described above, in that Maenishi et al. also fails to disclose both the "ribbonized assembly defining an input zone, a transition zone and an output zone encasing a portion of the first ends of the fiber optic cables and the optical fibers" and the "ferrule terminating the ribbonized assembly" as set forth in amended independent claim 1. Accordingly, claims 7, 8 and 10 are allowable at least by reason of their dependency from an allowable claim, and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

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Allowable Subject Matter

The Office Action objected to claim 9 as being dependent upon a rejected base claim, but indicated claim 9 would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

New claim 16 presents claim 9 in independent form, including all limitation of the base claim and any intervening claims. Accordingly, new claim 16 is believed to be in allowable condition, and notice to that effect is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-4 and 6-16 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-4 and 6-16 are respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 27th day of September, 2006.

By: Matthew B. McNuttName: **Matthew B. McNutt**